TRUSCON

MANUFACTURERS OF A COMPLETE LINE OF STEEL BUILDING MATERIALS

ENGINEERING PRODUCTS

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

THE COMPANY AND ITS PRODUCTS

THE TRUSCON STEEL COMPANY is an institution of national scope—the largest company of its kind in the world, manufacturing a complete line of steel building products.

They have been developed in accord with modern requirements for utility and quality, and include individual units peculiarly suited to all types of building and every structural condition.

Due to unusually efficient manufacturing facilities, dependable workmanship is assured. This is supplemented by a nation-wide engineering organization.

The TRUSCON STEEL COMPANY of 1933 represents "*Thirty Years of Pioneering and Leadership*" and the following noteworthy line of nationally known products:

STEEL WINDOW PRODUCTS
Double-Hung—
Donovan Awning Type—
Counter-Balanced—
Pivoted—
Continuous—
And Projected Windows
Mechanical Operators
Steel Casements
Silentaire Windows
Basement Windows
Steel Frames
Steel Lintels
Silentaire Noise Excluder
Erection

STEEL DOORS
Swing and Slide
Accordion
Vertical Lift
Vertical Lift-Swing
Bifolding
Overdoors
Canopy Type
Airplane Hangar

COMPLETE BUILDINGS
Flat Roof Types
Pitched Roof Types
Wintergardens
Auto-Servitoriums
Ferroclad Walls
Structural Steel
Erection

STEELDECK ROOFS
Ferrobord Type
Ferrodeck Type
Ferroplate Type
Ferrocoustic Type

FLOOR SYSTEMS
Teegrid Bridge Floors
Channelplate
Plategrid Open Flooring
Floorgrid

FERROCLAD PANELS
Metalclad Insulation
Armorply

METAL LATH PRODUCTS
A-Metal Laths and Hy-Rib
Doublemesh Herringbone
Insulmesh
Plasterboard
Stucco-Steel
Metal Plasterboard
Corner Beads
Cornerite
Channels and Studs
Mortar Boxes
Metal Trim

STEEL JOISTS
O-T (Open Truss) Joists
Nailer Joists
P-G (Plate Girder) Joists
Clerespan Trusses
Accessories

REINFORCING STEEL
Rib Bars
Kahn Trussed Bars
Column Hooping
Steel Forms
Floretyles
Locktyle
Inserts

ROAD REINFORCING
Welded Steel Fabric
Contraction Plates
Expansion Joints
Curb Bars
Edge Protectors
Steel Road Forms
Highway Guards
Railroad Crossings

STEEL POLES
Distribution Poles
Telephone Poles
H-Frames
Pipe Line Supports
Electrification Structures
Floodlighting

BOXES AND PLATFORMS
Beer Cases
Boxes for Beverages
Material Handling

FOUNDRY FLASKS

PRESSED STEEL
Automobile Frames
Truck Frames
Brake Drums
Axle Housings
Refrigerator Cabinets
Washing Machine Tubs
Tunnel Liner Plates

LABORATORY PRODUCTS
Waterproofings
Technical Paints
Floor Hardeners
Cement Roofing Tile

SUPPLEMENTARY ENGINEERING SERVICE

TRUSCON does more than manufacture building products—it offers a further service through the development of products to meet ever-changing needs and coordinates the uses of these to achieve the greatest possible efficiencies.

To render this service requires highly trained perception, judgment and skill. The breadth of vision of a commercial engineer depends, to a great extent, upon the variety of products manufactured by the parent company. An engineer employed by a company making nothing but steel joists will see in every project coming to his attention only the chance to use steel joists, while a structural steel engineer will be using structural steel at every possible point, whether these types of constructions are appropriate or not. The same can be said for the engineers of bar companies which are handling no other building materials.

Conversely, engineers employed by a company like Truscon, which is developing and marketing all types of steel building materials, have a broadness of experience which enables them to recommend the kind of material or arrangement of structural units that best fits the specific requirements.

This service, which is rendered by Truscon engineers, is not intended in any way to replace the service of the architectural engineer. It is supplemental, and is free for the asking.

TABLE OF CONTENTS

	Pages
A Complete Line of Products	2
Engineering Service	2
Types of Windows and Doors	3
Doors and Door Products	3 to 7
Industrial Canopy Doors	3
Telescopic Canopy Doors, Hangar Type	4
Vertical Lift-Swing Doors, Pier Type	5
Industrial Doors, Swing Type	6
Accordion Doors	6
Vertical Lift Doors, Two Section Type	7
Bifold Doors	7
Windows and Window Products	3 to 9
Continuous Windows	8
Mechanical Operators	8
Projected Windows, Commercial Type	9
Pivoted Windows	9
"Clerespan" Trusses	10
Open Truss Steel Joists	10
Floor Systems	11
Teegrid Bridge Floors	11
Channelplate Floors	11
Plategrid Open Flooring	11
Floorgrid Reinforced Floors	11
Floretyle Construction with Locktyle Lath	12
Ferroclad Structural Panels	12
Roofdecks	13
Ferrobord Steeldeck	13
Ferroplate Steeldeck	13
Ferrodeck Roof	13
Ferrocoustic Steeldeck	13
Steel Buildings, Standardized	14
Pitched Roof Types	14
Flat Roof Types	14
Sawtooth Roof Types	14
Ferroclad Walls	14
Tunnel Liner Plates	15
Field Organization	16

A COMPLETE LINE OF STEEL WINDOWS

TRUSCON Windows cover a wide range of building requirements and at the same time meet every condition of beauty, architectural harmony, simplicity, fine quality and superior craftsmanship demanded by the industry.

TYPES OF WINDOWS

Double-Hung Windows—(steel, aluminum or bronze). In types and sizes to meet architectural requirements.

Awning Type Windows—Prevent sun glare and drafts; ideal for schools and hospitals.

Casements—A complete line for monumental and public buildings, institutions, apartments and dwellings, including screens and operators for screens and artistic hardware.

Silentaire Windows, Casement Type—With integral non-mechanical noise mufflers.

Monumental Projected Windows—For quality installations in good buildings.

Detention Windows—For prisons, reformatories and psychopathic hospitals.

Architectural and Commercial Projected Windows—A practical window for a wide range of applications.

Continuous Windows and Operators.

Pivoted and Utility Windows.

STEEL DOORS DESIGNED TO MEET EVERY POSSIBLE NEED OF INDUSTRY

TRUSCON engineers were among the first to recognize that for maximum efficiency doors should be designed for the specific kind of work they should be called upon to perform. As a consequence, Truscon has developed a series of practical doors, each type of which is particularly efficient for certain installations, but all having in common the ability to withstand hard usage, to afford fire protection and to function indefinitely.

TYPES OF DOORS

Industrial Doors—For large and small openings.

Overdoors—Operating overhead.

Accordion Doors—Leaves fold against each other like a jack-knife.

Vertical Lift Doors.

Canopy Doors and Bifold Doors.

Airplane Hangar Doors—In various styles, straight track types, curved track types, canopy, telescoping and projected types.

Pier Doors—A vertical lift-swing type.

INDUSTRIAL CANOPY DOORS

THIS type is an all purpose door. It fits in anywhere, from the small individual residence garage to largest openings required in locomotive roundhouses.

The Industrial Canopy Door is opened or closed by one of the simplest sets of operating hardware built for any door of its type. The hardware has been carefully designed and perfected through years of continuous manufacture and service. Very few moving parts are necessary and on these, ball bearings have been installed to reduce friction.

Series 800LT—Doors up to and including 100 sq. ft. in area. Stiles and rails are 1¾x5 in. Industrial Rail Tube. The upper section of the leaf is fitted with steel windows of standard design. The lower portion is fitted with steel panels made from patent leveled sheets of 14 gauge on doors 10 ft. high or over and of 16 gauge on doors under 10 ft. high. Operation is by hand.

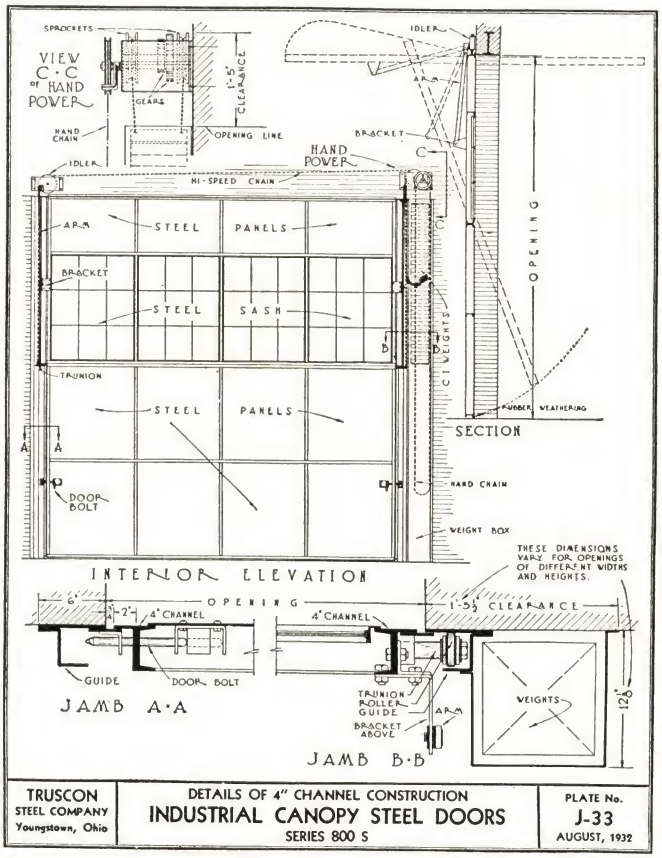
Series 800S—Doors over 100 sq. ft. in area. Stiles and rails are either 3-in. or 4-in. structural channels. Upper portion of the leaf is fitted with steel windows of standard design. Lower portion is fitted with steel panels made from patent leveled sheets of 13 gauge. Operation is by mechanical power operated by hand chain. If desired an electrical operation will be furnished.

Doors of both types are perfectly balanced at any degree of opening by cast-iron counterweights. The vertical travel is controlled by structural steel guides furnished by the door manufacturer. Rollers fastened to trunnions at both jambs operate in these guides and are so placed that the upper portion will balance the lower portion when the door is open, forming a canopy over the opening. The swinging action of the leaf is controlled by heavy swing arms fastened near the top of the door.

The weathering on either the Series 800LT or Series 800S is perfect. On both types it is steel at the head and both jambs, while at the bottom canvas insert rubber weathering is furnished.

Installation is simple and does not require expensive steel frames or structural steel supports.

SERIES 800LT AND 800S



TRUSCON STEEL COMPANY Youngstown, Ohio	DETAILS OF 4" CHANNEL CONSTRUCTION INDUSTRIAL CANOPY STEEL DOORS SERIES 800 S	PLATE No. J-33 AUGUST, 1932

TELESCOPIC CANOPY DOORS

DESIGNED to meet the ever increasing demand for an electrically operated door that offers fast operation and freedom from the burdensome task of moving a multiple leaf slide door by hand. Especially suited for airplane hangars and any large opening which must be opened quickly and positively.

In their movement no space inside the building is required and a minimum of apron or platform space is consumed. The upper section is pivoted at the lintel and swings outward and upward. The lower section raises and swing simultaneously with the swing of the upper section. The canopy formed when the leaves are in this position is equal to one-half the opening height. The door does not project inside the building to interfere with the lighting or sprinkler systems. The opening may be divided vertically into any number of separate operating sections, starting with a 20 ft. wide section and up to a width to suit individual conditions.

The doors are built of hot-rolled structural steel shapes of sizes and weights to suit the dimensions and operating conditions of the particular openings. The door panels are a combination of 13 gauge patent leveled steel plates to a height of 5 ft., and Truscon Standard Steel Windows which occupy approximately 60% of the door opening. The panel position above the windows is of 16 gauge patent leveled steel sheets. The edges of all windows and steel panels in contact with the framework are embedded in mastic and secured to the frame with machine screws making a weathertight connection.

Pilot doors may be provided for each opening adjacent to the jambs if so specified. Pilot doors are of standard Truscon industrial tube type equipped with cylinder lock for locking from one or both sides.

All corners and intersections are coped and then welded. All welds are ground smooth on the exposed surfaces and develop the full strength of the section.

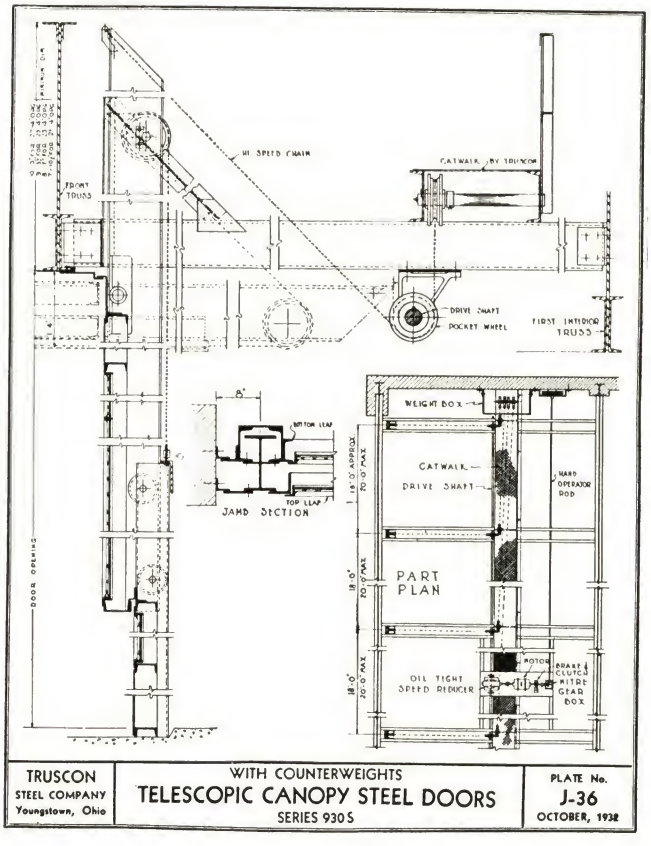
The electrical operator is a mechanical perfection developed by Truscon engineers to provide fast quiet positive operation. Fast emergency hand operation is provided to open the door in case of power failure.

The basic design of the Truscon Telescopic Canopy Door locks the door securely in any position. The same basic principles keep the loads imposed on the lintel at a minimum.

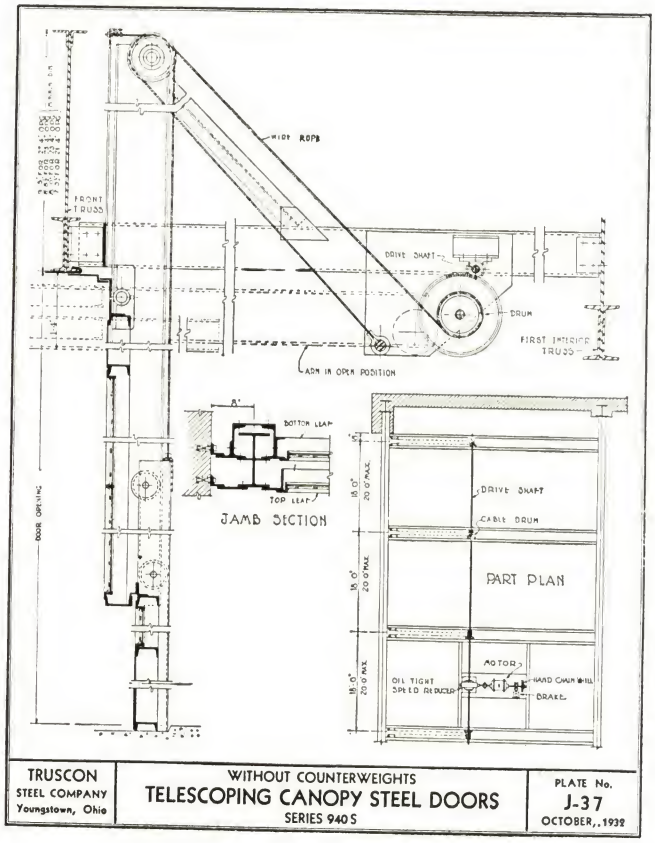
SERIES 930S—Counterweighted
SERIES 940S—Without Counterweights

Series 930S Counterweighted—The operating mechanism is of the counterweighted type, balancing the leaves at any degree of opening. The motors, brakes, worm and gear reducers, limit switches, chain, cables, sprockets and all connections are high-grade of standard manufacture. Operators are designed to open the doors from full closed to full open within 50 to 60 seconds.

Series 940S Without Counterweights—Power is transmitted from the motor through a speed reducer to geared drums over which the flexible steel cable is wound. The cables transmit the power to the hinge beams. Large, extra heavy magnetic brakes, placed on the motor, stop and hold the door in any desired position. The action of the brakes is automatic. They operate as soon as the power for the motor is turned off.



TRUSCON STEEL COMPANY Youngstown, Ohio	WITH COUNTERWEIGHTS TELESCOPIC CANOPY STEEL DOORS SERIES 930S	PLATE No. J-36 OCTOBER, 1932



TRUSCON STEEL COMPANY Youngstown, Ohio	WITHOUT COUNTERWEIGHTS TELESCOPING CANOPY STEEL DOORS SERIES 940S	PLATE No. J-37 OCTOBER, 1932

VERTICAL LIFT-SWING DOORS

SERIES 1000T—Tubular
SERIES 1000S—Structural Steel

DESIGNED primarily for piers these doors can be used in any type of structure by changing the arrangement of the operators slightly. Because of their rugged construction these doors are particularly adaptable to extremely large door openings.

When opened, the doors are out of the way; when closed, they form positive protection against intruders and from the elements. They are easy to operate and render continued, unfailing service. With these features Truscon engineers have incorporated permanence and durability. Many hundreds of these doors have been built and are being used today in the most modern and up-to-date piers.

The door is divided horizontally into two equal sections. The upper section contains the glass and provides excellent daylighting for the interior. The lower solid section slides vertically in guides on the door jamb into guides on the upper section which is hinged to the lintel. The nested sections can then be swung inward to any angle up to a horizontal position. The raising and swinging movements are accomplished by operators with hand or electric power control. All mechanical details have been designed with great care.

The lower portion of the doors is fitted with 13 gauge steel panels fastened in place with machine screws. The upper portion is fitted with windows built up of Truscon standard members, not less than $1\frac{7}{16}$ in. deep, with all joints air-hammer riveted and with the glass held in place with steel window putty and spring wire glazing clips or continuous steel glazing angles.

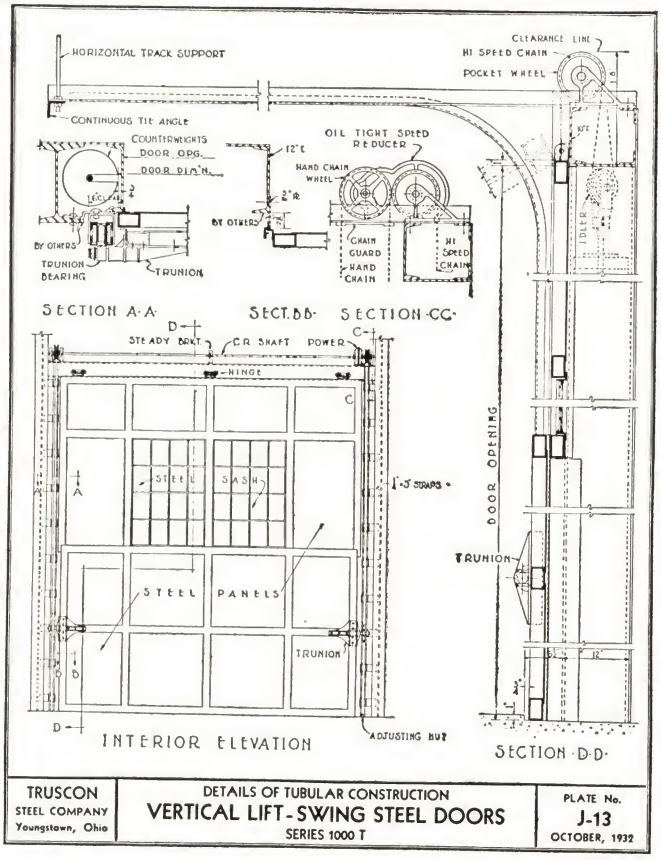
Corners and intersections are welded and ground smooth. All welds develop the full strength of the section. Corners are mitered.

Pilot doors, opening inward, are provided in the lower leaf where indicated. They are equipped either with a two cylinder spring latch and dead-bolt mortise cylinder lock, or a lever latch with padlock brackets. All hardware is flush on the outside.

The lower leaf is equipped with Truscon extra heavy specially designed hardware. The upper leaf is equipped with specially designed Truscon extra heavy steel hinges and guides.

Series 1000T, Tubular Construction—These doors are constructed from cold-rolled welded steel tubing, with additional horizontal and vertical reinforcing members where required for strength and rigidity. The stiles, top rail, cross rails and bottom rail are of 4x2½-in. 13 gauge tubing.

Series 1000S, Structural Steel Construction—These doors are constructed from structural shapes with additional horizontal and vertical reinforcing members of the same material where required for strength and rigidity. The stiles, top rail, cross rails and bottom rail are hot-rolled channels of suitable size.



Erie R. R. Pier No. 21, North River, New York, N. Y.
GRAHAM KING, Architect

INDUSTRIAL DOORS
FOR LARGE OPENINGS

INDUSTRIAL Doors for large openings meet every requirement of practical use and protection and are designed to fit the conditions of industry. They have been perfected through extensive use in industrial buildings of all kinds and are furnished in practically any size and arrangement, and with any method of operation.

All stiles and rails are constructed of 13 gauge cold rolled welded steel tubing, 4x2½ in. Corners and intersections are welded and ground smooth. The upper portion of the doors is fitted with a window built up of Truscon standard members. The lower portion is fitted with panels made of patent leveled sheet, not less than 13 gauge, fastened in place by machine screws.

Sliding doors are hung from Truscon standard double-wheel trolleys and heavy channel track and are equipped with back stops, binders and complete hardware.

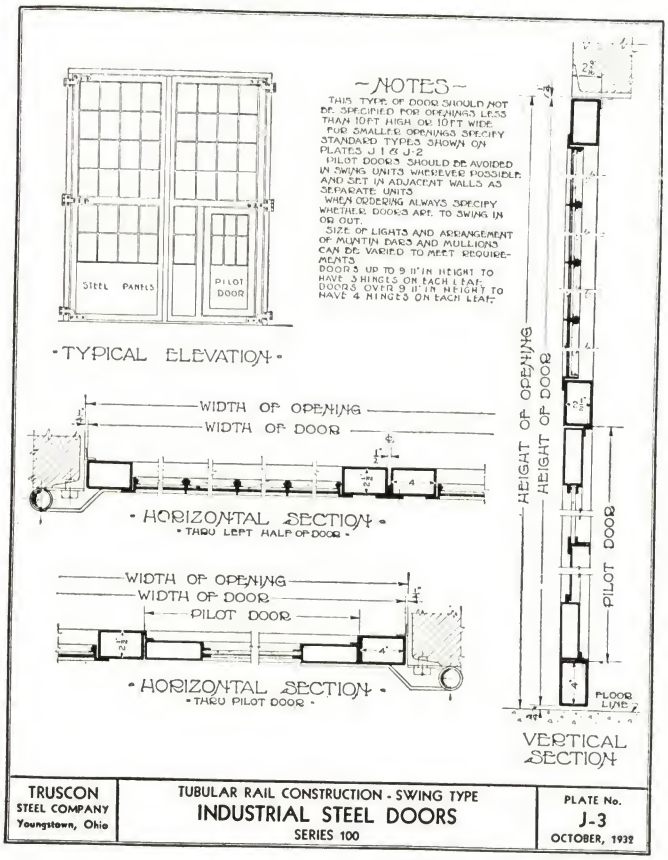
Swinging doors are equipped with Truscon Standard heavy steel strap hinges. (Ball bearing butt hinges furnished if specified.) All swing doors are equipped with Truscon Standard mortise cylinder Cocks (or lever latch and padlock brackets) and heavy handles inside and out (cylinder lock not furnished on doors over 50 sq. ft. in area).

Pilot doors may be provided adjacent to jamb if specified. They are of standard Truscon industrial tube type equipped with cylinder lock.

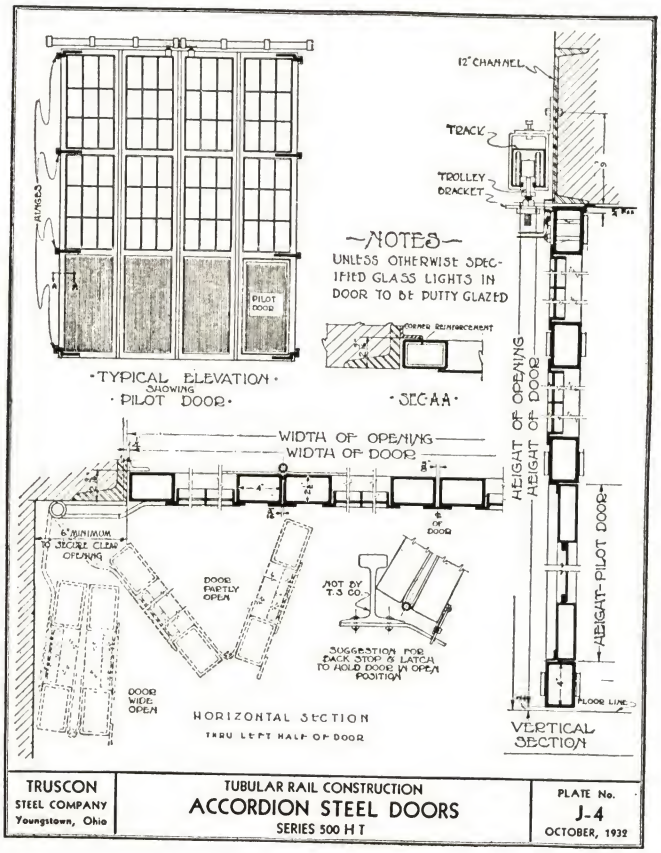
Doors are shipped with complete hardware, such as track, brackets, trolleys, hinges, cam bolts and binders. Astragals are provided with all double swing or double slide doors as weathering between leaves.

Furnished for openings more than 10 ft. high or 10 ft. wide. Suggestions on types of Industrial Doors to meet special conditions will be furnished without obligation.

SERIES 100
Seamless Tubular Rail, Swing and Slide Types


-NOTES-
THIS TYPE OF DOOR SHOULD NOT BE SPECIFIED FOR OPENINGS LESS THAN 10FT HIGH OR 10FT WIDE. FOR SMALLER OPENINGS SPECIFY STANDARD TYPES SHOWN ON PLATES J 1 & J-2
PILOT DOORS SHOULD BE AVOIDED IN SWING UNITS WHEREVER POSSIBLE AND SET IN ADJACENT WALLS AS SEPARATE UNITS
WHEN ORDERING ALWAYS SPECIFY WHETHER DOORS ARE TO SWING IN OR OUT.
SIZE OF LIGHTS AND ARRANGEMENT OF MUNTIN BARS AND MULLIONS CAN BE VARIED TO MEET REQUIREMENTS.
DOORS UP TO 9'-11" IN HEIGHT TO HAVE 3 HINGES ON EACH LEAF. DOORS OVER 9'-11" IN HEIGHT TO HAVE 4 HINGES ON EACH LEAF.
STEEL PANELS
PILOT DOOR
-TYPICAL ELEVATION-
WIDTH OF OPENING
WIDTH OF DOOR
-HORIZONTAL SECTION-
-THRU LEFT HALF OF DOOR-
WIDTH OF OPENING
WIDTH OF DOOR
PILOT DOOR
-HORIZONTAL SECTION-
-THRU PILOT DOOR-
HEIGHT OF OPENING
HEIGHT OF DOOR
PILOT DOOR
FLOOR LINE
VERTICAL SECTION
TRUSCON STEEL COMPANY Youngstown, Ohio
TUBULAR RAIL CONSTRUCTION - SWING TYPE
INDUSTRIAL STEEL DOORS
SERIES 100
PLATE No. J-3
OCTOBER, 1932

ACCORDION DOORS



SERIES 500HT AND 500LT

THESE doors are used extensively in railroad structures and other buildings requiring maximum height of door opening with minimum obstruction. They are particularly adaptable in extremely wide or high openings where a swing door would ordinarily be used.

In operation, the leaves fold against one another and since they cannot bind or jam, one person can open or close them easily. They are hung at the top from heavy four-wheel roller and ball-bearing trolleys, running in a heavy channel track placed above the opening. They are shipped with complete hardware, such as track, brackets, trolleys, hinges, cane bolts and binders.

Stiles and rails are made from tubing. For Series 500HT, 4x2½ in. 13-gauge tube is standard; for Series 500LT, standard industrial tube 1¾x5 in. 14-gauge is used. The large tube is used when doors are for extremely large openings or for smaller doors subject to unusually rough and hard treatment. For openings 16 ft. wide and 12 ft. high and under, receiving ordinary usage, the lighter tube will give years of uninterrupted service.

These doors are furnished with steel windows in the upper portion, although, if desired, they can be furnished with solid steel panels throughout.

Pilot doors may be provided adjacent to the jamb if specified. They are of standard Truscon industrial tube type fitted with a two cylinder spring latch and dead bolt heavy cylinder lock (or lever latch with padlock brackets) and heavy steel handles.

Besides adding permanently good appearance to a building, Truscon Accordion Steel Doors afford greatly improved weather protection and long life. Maintenance has proved remarkably low because of their rigid construction and inherent permanent qualities.

VERTICAL LIFT DOORS
TWO-SECTION TYPE

WHERE it is desirable to have the full width of the door opening without any obstruction from the doors themselves, Two-Section Vertical Lift Doors are recommended. The door consists of two leaves which move at different speeds when raised and which clear the door opening when fully open.

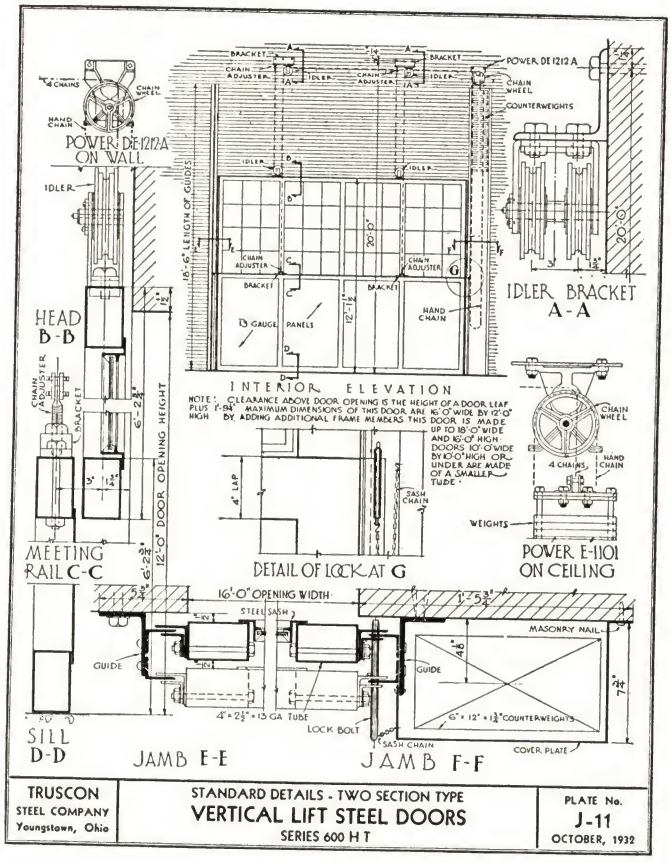
Two-Section Vertical Lift Doors are particularly useful for installation in warehouses, freight houses, shipping platforms, wholesale and storage buildings, ramp garages, and similar buildings. Their rugged construction and the heavy plate used makes them an effective barrier against undesired trespassers, preventing loss of merchandise.

Series 600LT—For door leaves not over 100 sq. ft. in area. Stiles and rails are of Truscon standard industrial tube. Lower panel is fitted with 16-gauge patent leveled steel sheets. Upper panel is fitted with steel windows of Truscon, standard design, or steel panels as specified. Due to the rapidity with which these light doors can be operated glazing angles are deemed necessary for holding the glass in place. Operation is by hand without the use of a mechanical power.

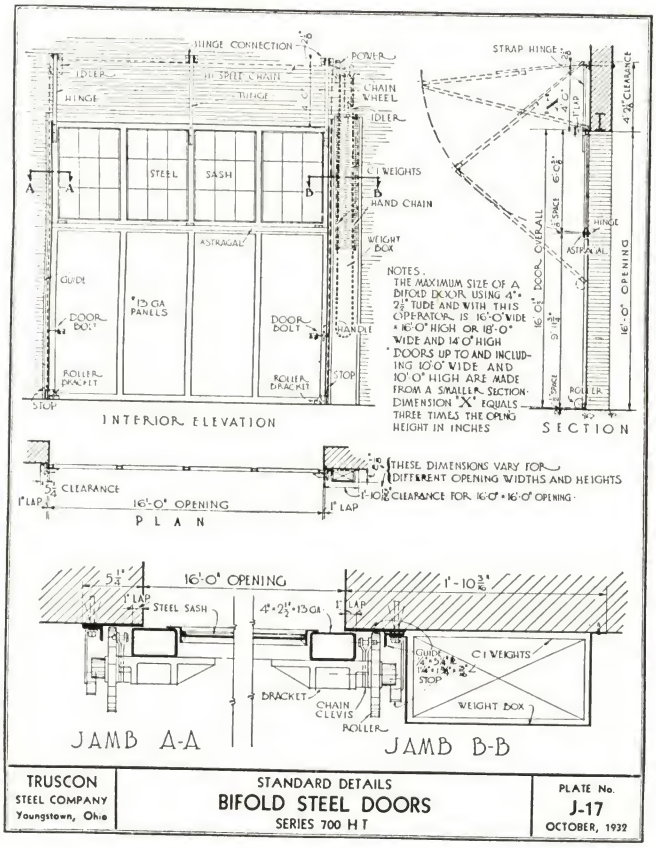
Series 600HT—For door leaves over 100 sq. ft. in area. Stiles and rails are of 4x2½ in., 13-gauge tube. Lower panel is fitted with 13-gauge patent leveled steel sheets. When windows are used in upper panel glass is held in place with steel window putty and spring wire glazing clips. Due to slower operation glazing angles are not considered necessary, but will be furnished if specified. Furnished with a mechanical power operated by a hand chain. Can be made of structural shapes if desired.

In providing clearance for this type of door, the distance from the top of the door frame to the ceiling or roof must be one-half the height of the door opening plus the necessary clearance for housing the operating mechanism.

SERIES 600LT AND 600HT



BIFOLD DOORS



SERIES 700LT AND 700HT

THESE doors are used for freight houses, warehouses, shiping and loading platforms. They are mechanically correct and require less headroom than many other types that fold above the opening. They are counterweighted to balance in any position and operate easily.

Series 700LT—For door leaves not over 100 sq. ft. in area. Stiles and rails are of Truscon standard industrial tube. The lower panel is fitted with 14-gauge patent leveled steel sheets. Upper panel is fitted with steel sheets or windows of Truscon Standard design. Due to the rapidity with which these light doors can be operated, glazed angles are deemed necessary for holding the glass in place. Operation is by hand without the use of a mechanical power.

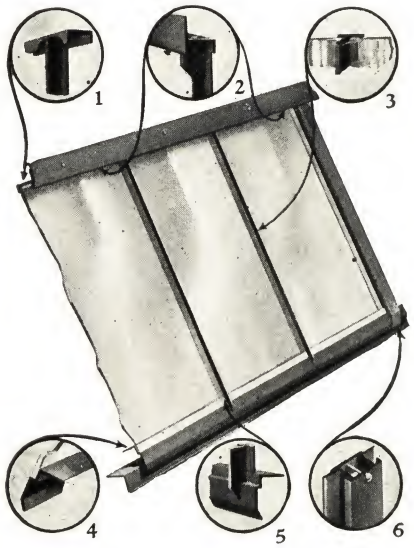
Series 700HT—For door leaves over 100 sq. ft. in area. Stiles and rails are of 4x2½-in. 13-gauge tube. Lower panel is fitted with 13-gauge patent leveled steel sheets. When windows are used in upper panel glass is held in place with steel window putty and spring wire glazing clips. Due to slower operation glazing angles are not considered necessary but will be furnished if specified. Furnished with a mechanical power operated by a hand chain.

Besides adding greatly to the appearance of the building, Bifold Doors give positive weather protection.

CONTINUOUS WINDOWS

IDEALLY suited for use in industrial plants where the nature of the factory work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation. Particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.

The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.



CONSTRUCTION DETAILS

(1) Welded Mortise and Tenon Joint—Prevents twisting.

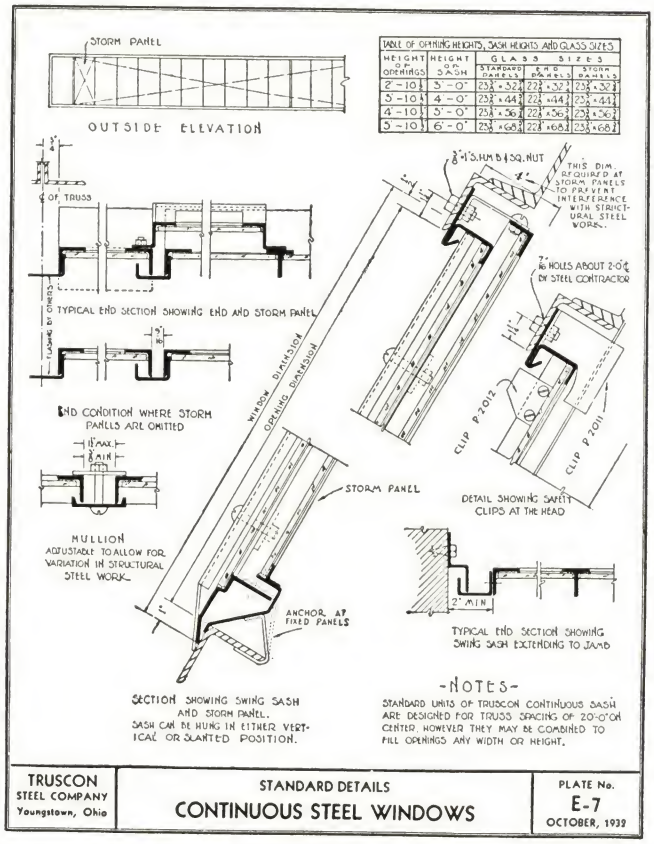
(2) Hinge Member—Forms continuous bearing giving perfect weathering.

(3) Glazing Clips—Of heavy brass on vertical muntin bars.

(4) Wide Flange—For the attachment of mechanical operator.

(5) Mortise and Tenon Joint—Showing welding.

(6) Vertical Expansion Mullion.


STORM PANEL
OUTSIDE ELEVATION
TABLE OF OPENING HEIGHTS, SASH HEIGHTS AND GLASS SIZES
HEIGHT OF OPENINGS
HEIGHT O.C. SASH
GLASS SIZES
STANDARD PANELS
END PANELS
STORM PANELS
2'-10½"
3'-0"
4'-0"
5'-0"
6'-0"
TYPICAL END SECTION SHOWING END AND STORM PANEL
END CONDITION WHERE STORM PANELS ARE OMITTED
MULLION ADJUSTABLE TO ALLOW FOR VARIATION IN STRUCTURAL STEEL WORK
WINDOW DIVISION
OPENING DIVISION
STORM PANEL
ANCHOR AT FIXED PANELS
SECTION SHOWING SWING SASH AND STORM PANEL. SASH CAN BE HUNG IN EITHER VERTICAL OR SLANTED POSITION.
THIS DIM. REQUIRED AT STORM PANELS TO PREVENT INTERFERENCE WITH STRUCTURAL STEEL WORK.
HOLES ABOUT 2'-0" BY STEEL CONTRACTOR
CLIP P-2012
CLIP P-2011
DETAIL SHOWING SAFETY CLIPS AT THE HEAD
TYPICAL END SECTION SHOWING SWING SASH EXTENDING TO JAMB
-NOTES-
STANDARD UNITS OF TRUSCON CONTINUOUS SASH ARE DESIGNED FOR TRUSS SPACING OF 20'-0" O.C. CENTER. HOWEVER THEY MAY BE COMBINED TO FILL OPENINGS ANY WIDTH OR HEIGHT.
TRUSCON STEEL COMPANY Youngstown, Ohio
STANDARD DETAILS
CONTINUOUS STEEL WINDOWS
PLATE No. E-7
OCTOBER, 1932

PRESSED STEEL FRAMES—Particularly well adapted for use in modern structures where the effect of massive strength must be accurately met. Made of heavy gauge copper-bearing steel, absolutely uniform and economical. Details furnished on request.

MECHANICAL OPERATORS

FOR the operation of Continuous, Pivoted, Projected and Prison Type Steel Windows are furnished in either hand or motor operated units as hereinafter described.

TENSION TYPE OPERATORS

Type P-57—Hand operation is most frequently used for runs at top or bottom hung Continuous Windows and Pivoted Steel Windows. This operator provides fast and smooth operation. The operator may be motorized if desired and will handle 185 ft. of Continuous Windows with a maximum height of 6 ft. or ventilators in 300 ft. of Pivoted Windows.

Type CP-69—This operator is designed to operate Continuous Window runs up to 375 ft. in length with a maximum height of 6 ft. It can only be used with a motor.

Type CP-83—This operator is designed to operate Continuous Window runs up to 700 ft. in length with a maximum height of 6 ft. It can only be used with a motor.

TORSION OPERATORS

Type P-515—Hand operation is commonly used on Pivoted Windows controlled either by means of hand chain or vertical shaft and miter gear. When torsion type arms are used, runs may be operated up to 100 ft. in length. When rack and pinion type arms are used, runs may be operated up to 200 ft.

Projected ventilators can also be operated up to a limit of 60 ft. in length when torsion arms are used and 100 ft. in length when rack and pinion arms are used. In either case, two arms must be furnished per vent.

Type P-289—With the use of Torsion operators it is only possible to motorize the rack and pinion type using the P-289 power. This type of operator will operate ventilators in 300 ft. of Pivoted Windows.

SCREW TYPE OPERATORS

Type CP-259—This operator is designed for operation of Continuous Windows in power houses where one row of windows is located above the other and may be used for operating one or more bays. This operator is screw type and in all cases must be motorized.

Type CP-419—This operator is designed especially to operate Prison Type Windows and is a vertical screw design, and operated by means of crank handle attached to the screw power.

PROJECTED WINDOWS

WHERE neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of these windows.

They are widely used in buildings where low cost is essential. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained. Projecting ventilators make possible ready cleaning from the inside.

Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Thirty-one standard types of Commercial Projected Window, as shown in the plate B-1 on this page, are available in either 12x18-in. or 14x20-in. glass size, many of which are carried in warehouse stocks.

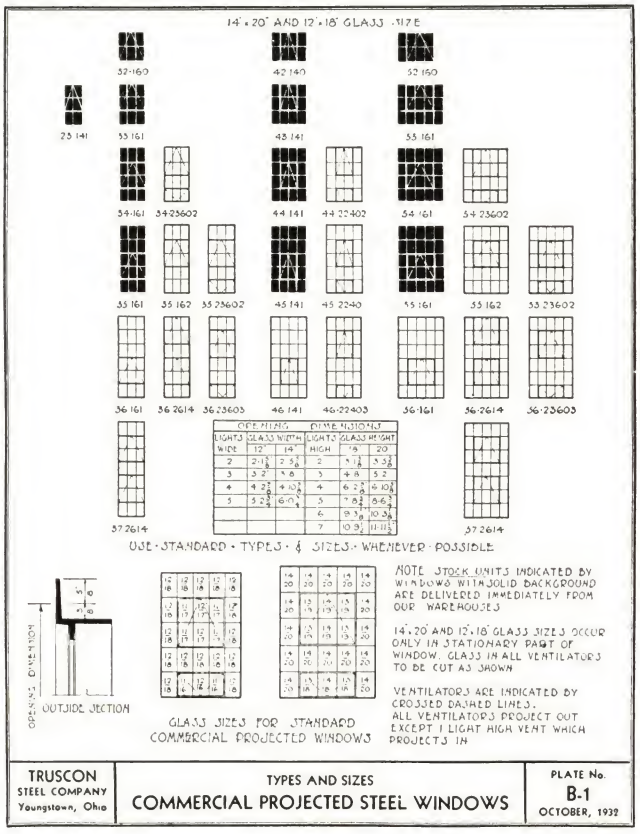
All joints are mortised and tenoned and air-hammer riveted. The intersection of horizontal and vertical muntins have a dovetail mitre, rigidly interlocking the bars. Muntin bars are continuous from head to sill and from jamb and jamb, except where ventilators occur.

Ventilators have double contact weathering on all four sides which assures weather-tightness. Two heavy supporting arms, attached to ventilator and frame, are concealed when window is closed. Rivet holes in arms have brass bushings and sliding pivot is of forged brass. The side of the frame acts as a guide for the sliding pivot eliminating recess for collection of dirt and ice. Hardware is malleable iron, cadmium plated.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. 0 in. in width by 12 ft. 0 in. in height, *must be inside angle glazed.* Maximum glass size is 350 square inches.

COMMERCIAL TYPE


14" x 20" AND 12" x 18" GLASS SIZE
OPENING DIMENSIONS
USE STANDARD TYPES & SIZES WHENEVER POSSIBLE
NOTE STOCK UNITS INDICATED BY WINDOWS WITH SOLID BACKGROUND ARE DELIVERED IMMEDIATELY FROM OUR WAREHOUSES
14" x 20" AND 12" x 18" GLASS SIZES OCCUR ONLY IN STATIONARY PART OF WINDOW. GLASS IN ALL VENTILATORS TO BE CUT AS SHOWN
VENTILATORS ARE INDICATED BY CROSSED DASHED LINES. ALL VENTILATORS PROJECT OUT EXCEPT 1 LIGHT HIGH VENT WHICH PROJECTS IN
OUTSIDE SECTION
GLASS SIZES FOR STANDARD COMMERCIAL PROJECTED WINDOWS

TRUSCON STEEL COMPANY Youngstown, Ohio	TYPES AND SIZES COMMERCIAL PROJECTED STEEL WINDOWS	PLATE No. B-1 OCTOBER, 1932

PIVOTED WINDOWS

ADAPTABLE to all types of industrial and manufacturing buildings including warehouse, factory and storage buildings, garages, filling stations, etc., and especially desirable when a great deal of light is needed. The slender but strong and rigid steel muntin bars admit the maximum of light to the interior. They are permanent, fireproof, never stick, shrink or warp and open or close easily regardless of climatic conditions.

Pivoted Windows are made of heavy, hot-rolled rust-resisting, steel sections. The outside section is of angle shape to allow $\frac{5}{8}$ in. anchorage at the masonry or mullion connection. The intersection of the horizontal and vertical muntin is a dovetail mitre rigidly interlocking the bars. Double contact weathering is provided on all four sides of ventilator.

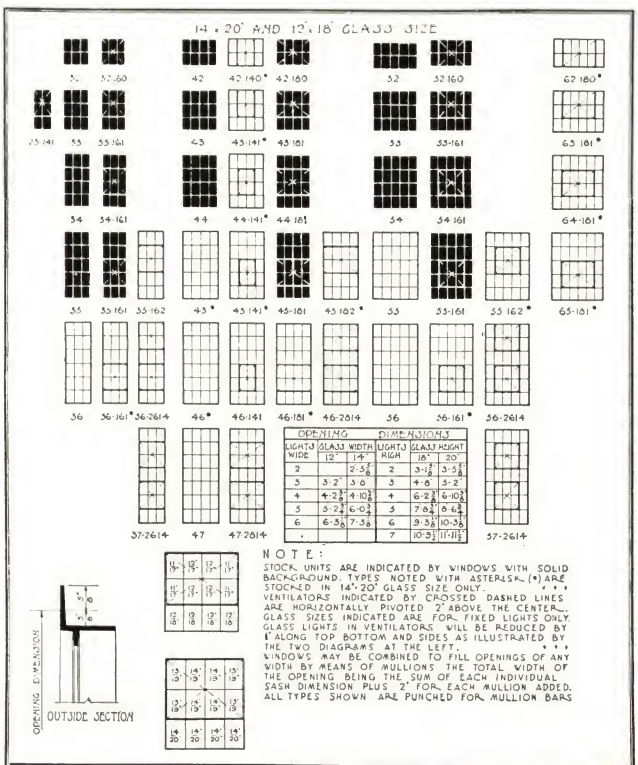
Glass size in stationary portion of sash is 12x18 in., or 14x20 in. All lights at top and bottom of ventilator are 1 in. shorter and all lights at sides of ventilators are 1 in. narrower than in stationary portion of windows. Twenty-three types of sash illustrated in black in diagram are available for quick delivery from stocks.

Truscon Pivoted Steel Windows are made in a wide range of sizes to fill practically all building needs. They can be combined with standard mullions to fit almost any size of window opening. All windows are given one dip coat of protective paint at factory.

All members are of Truscon specification hot-rolled special billet steel with all joints mortised and tenoned and air-hammer riveted. Ventilators are equipped with push bar, cam latch, or spring latch and chain as specified. Hardware is cadmium plated. Runs of ventilators may be equipped for operation by torsion or other approved type of operator as manufactured by TRUSCON STEEL COMPANY (see page 8).

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. 0 in. in width by 12 ft. 0 in. in height, *must be inside angle glazed.* Maximum glass size is 350 square inches.


14" x 20" AND 12" x 18" GLASS SIZE
OPENING DIMENSIONS
NOTE:
STOCK UNITS ARE INDICATED BY WINDOWS WITH SOLID BACKGROUND. TYPES NOTED WITH ASTERISK (*) ARE STOCKED IN 14"-20" GLASS SIZE ONLY.
VENTILATORS INDICATED BY CROSSED DASHED LINES ARE HORIZONTALLY PIVOTED 2" ABOVE THE CENTER.
GLASS SIZES INDICATED ARE FOR FIXED LIGHTS ONLY. GLASS LIGHTS IN VENTILATORS WILL BE REDUCED BY ⅛" ALONG TOP BOTTOM AND SIDES AS ILLUSTRATED BY THE TWO DIAGRAMS AT THE LEFT.
WINDOWS MAY BE COMBINED TO FILL OPENINGS OF ANY WIDTH BY MEANS OF MULLIONS THE TOTAL WIDTH OF THE OPENING BEING THE SUM OF EACH INDIVIDUAL SASH DIMENSION PLUS 2" FOR EACH MULLION ADDED. ALL TYPES SHOWN ARE PUNCHED FOR MULLION BARS
OUTSIDE SECTION

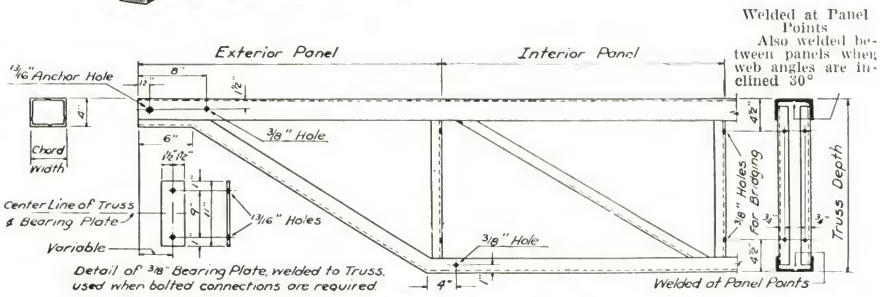
TRUSCON STEEL COMPANY Youngstown, Ohio	STANDARD TYPES AND SIZES PIVOTED STEEL WINDOWS	PLATE No. A-1 OCTOBER, 1932

"CLERESPAN" TRUSSES

TRUSCON "Clerespan" Trusses are in reality box type lattice girders having a double web system thus having the most economical and efficient distribution of metal and resulting in the most rigid type of structural unit.

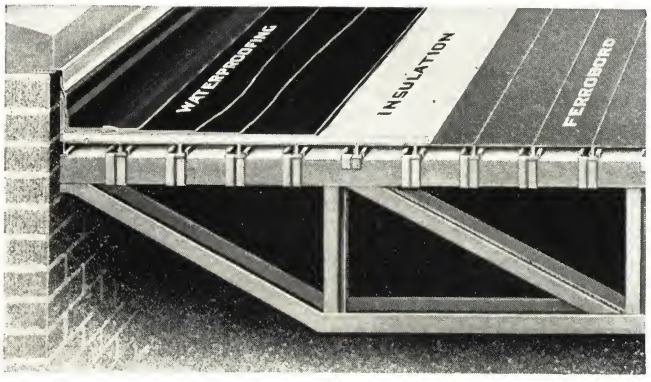
Truscon "Clerespan" Trusses when employed in floor construction can be used advantageously in buildings of all types of occupancies regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction, "Clerespan" Trusses meet every requirement of every type of building.

"Clerespan" Trusses
For spans up to 60 ft.
Eliminate columns


Welded at Panel Points
Also welded between panels when web angles are inclined 30°
Exterior Panel
Interior Panel
13/16" Anchor Hole
Chord Width
3/8" Hole
Center Line of Truss & Bearing Plate
Variable
13/16" Holes
Truss Depth
Detail of 3/8" Bearing Plate, welded to Truss, used when bolted connections are required
Welded at Panel Points

ADVANTAGES

Can be used in floor and roof spans up to 60 feet.
Provide greater areas of unobstructed floor space.
Floor areas unobstructed by columns give greater flexibility in arrangement of interior equipment.
Securely bridged by means of "Strut" or cross bridging, securely bolted in place.
A fireproof type of construction quickly obtained.
Possessing unusual lateral stiffness.
Designed as a Pratt Type Truss.
All compression stresses reduced to provide for local as well as direct bending.
Automatic electric resistance pressure welding employed in all joints.
Made entirely of hot rolled structural angles.
A box type lattice girder having a double web system.
Permits of the passage of pipes and conduits.
Being underslung in design, they are easily erected.



"Clerespan" Trusses with Ferrobord Steeldeck Roof

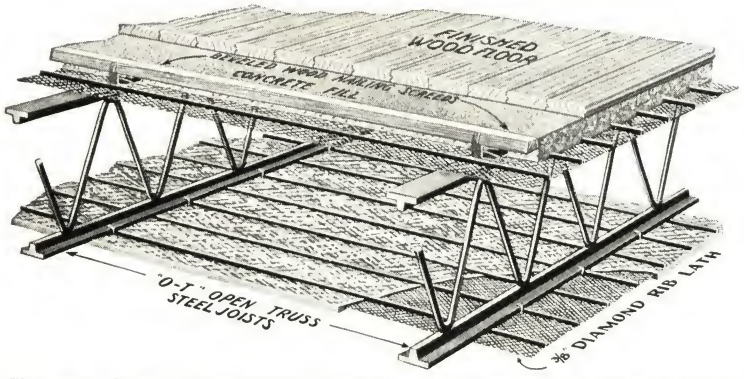
"O-T" OPEN TRUSS STEEL JOISTS

Designed and manufactured in accordance with the specifications of the Steel Joist Institute and the Simplified Practice Recommendations (S.P.R. 9430) on Open Web Steel Joists as issued by the U. S. Department of Commerce, Bureau of Standards.

Top and bottom chords are of wide tee-shaped members to provide the greatest resistance to buckling strains. Bottom tee is continuous to the bearings, where it is welded with the web plate and top chord to form a solid I-beam. Web members are continuous from end to end so that stresses are transmitted perfectly.

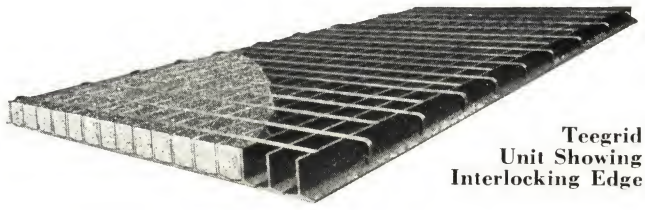
The underslung design of the bearing permits maximum headroom under the supporting girders. The open web allows the passage of pipes and conduits of any number and in any direction.

For Economical and Fireproof Floors



Truscon Open Truss Steel Joist Construction with Finished Floor of Wood Secured by Means of Screeds placed at Right Angles to the Joists and Elevated to Provide for Concrete Underneath

FLOOR SYSTEMS



Teegrid
Unit Showing
Interlocking Edge

TEEGRID BRIDGE FLOORS

(Patent Applied For)

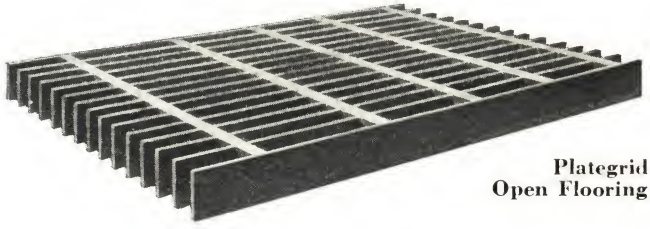
THIS floor system consists of load-bearing T-sections and load distributing bars at right angles to each other, with the intervening spaces filled with concrete vibrated into place.

The fabrication of Teegrid involves the welding of T-sections, flange to flange, with the stems extending upward.

Triangular Traffic bars are then pressure welded to the vertical stems, at 4-in. centers, with the flat side of the bar level with the top edge of the "T" stems, to form a rigid, solid slab unit.

Advantages—An engineering design capable of carrying all types of specified bridge loading. Maximum carrying capacity with minimum dead weight. Light weight effects considerable saving in bridge structure. Absolute continuity of material and load distribution throughout entire structure. Elimination of field forms for concrete wearing surface. The erection of Teegrid units provides an immediate safe working floor. Erected by the same labor which erects the balance of bridge steel. Concrete can be poured and vibrated in place as soon as Teegrid is erected. A wearing surface armored with steel, offering great resistance to traffic abrasion.

Used for bridge and heavy duty floors of all kinds.



Plategrid
Open Flooring

PLATEGRID OPEN FLOORING

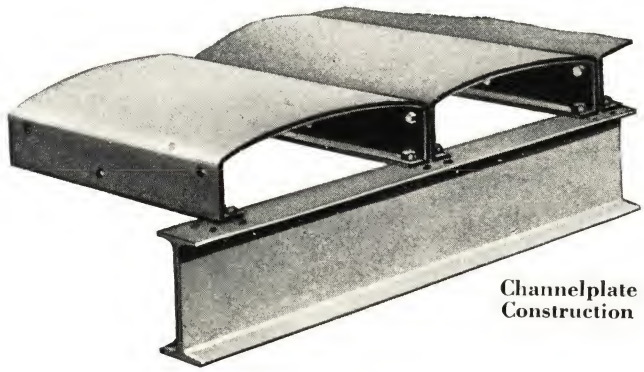
(Patent Applied For)

An all-steel grating developed for use as open type flooring, to permit the passage of light and air to spaces above or below the floor. Its construction is simplified—permanence, safety, strength, cleanliness, efficiency and economy are features. Being electro-forged into a unit, Plategrid offers obvious advantages over ordinary types of gratings.

Plategrid consists of a series of bars of variable depth and thickness placed parallel and on edge at definite intervals. Along the top of the parallel bars, and at right angles to them special cold-drawn triangular bars are electro-forged into the parallel bars, so that the surfaces are level with each other. When the main bars are two inches or greater in depth, supplemental cross bars are electro-forged into the bottom in the same manner as at the top, but at greater spacings.

Manufactured in four standard types in depths of ¾ to 2¼ in. and lengths of 2 ft. to 16 ft.

Plategrid open type steel flooring is used for area gratings, manhole coverings, cooling floors, walk-ways and platforms for boiler rooms, power houses, pumping stations, water works, filtration and sewage disposal plants, oil refineries, gas plants, foundries, stair treads, sidewalk grating for subways and many other uses.



Channelplate
Construction

CHANNELPLATE FLOORS

(Patent Applied For)

DESIGNED for medium and heavy loading, offering important economies, especially where the total floor load exceeds 150 lbs. per sq. ft.

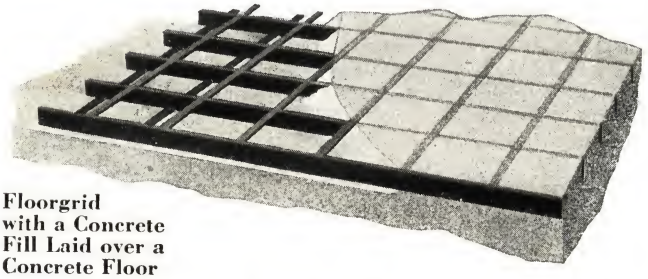
This structural steel floor consists of a series of Channelplate sections bolted web to web and with the flanges bolted, riveted or welded at the ends of the Channelplate to the structural supporting frame.

The Channelplates are pressed from open hearth steel plates of varying thicknesses. When the web of the Channelplate is bolted to the web of the adjacent section, the double web and flanges form an I-beam section that occurs at intervals of 20, 22 or 24 in.

The top flange between I-beams is arched with a standard crown height of ¾ in., thereby providing unusual stiffness and a high resistance to impact or moving loads. A wearing surface of concrete reinforced with welded steel fabric, asphalt mastic, or other materials as desired, is applied directly to the Channelplate construction.

Advantages—Channelplate floors are from 25 to 60 lbs. per sq. ft. lighter than the ordinary types of floors used for medium or heavy duty loadings. The result is a worthwhile saving in the structural steel frame required for its support and in the total weight of the structure.

Channelplates are self-supporting—there is no need of centering or other temporary supports. As soon as supporting frame has reached floor level, the Channelplates can be laid. They are erected by the same labor, and at the same time, as the structural steel and can be laid temporarily, if desired, and used as working or storage platforms.



Floorgrid
with a Concrete
Fill Laid over a
Concrete Floor

FLOORGRID REINFORCED FLOORS

(Patent Applied For)

This product has been developed for use where abrasion and wear are severe and where continuous service from floors is necessary. It consists of rectangular straight bars spaced at definite intervals, with triangular cross bars electro-forged into them to form a steel armored wearing surface that is unequalled for heavy duty. Floorgrid is designed to function purely as a wearing surface, although it does impart considerable strength to the construction. The steel armoring protects against the wear of rolling or dragging loads, as well as against the destructive action of loading or unloading heavy articles, for the unit construction of Floorgrid positively transmits the force of the blow over a large area.

Three standard types furnished in lengths of 8 ft., ¾, 1, 1½ or 2 in. deep in widths slightly over 3 ft. 4 in.

FLORETYLE CONSTRUCTION

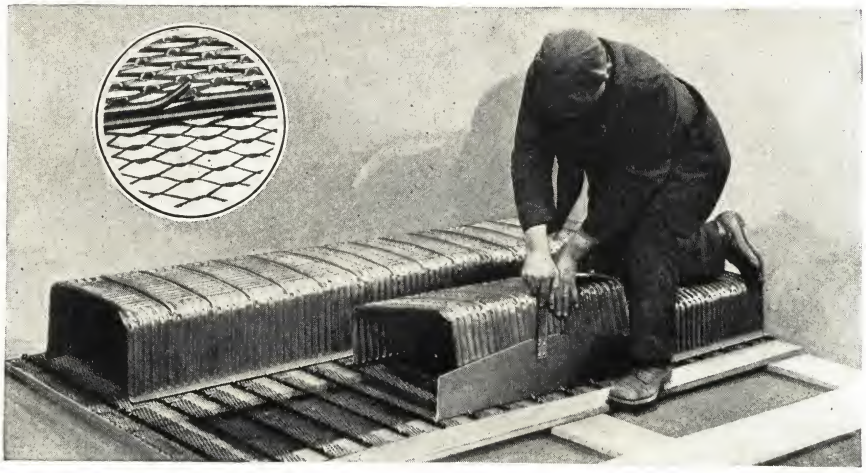
LOCKTYLE

LOCKTYLE is an improved Floretyle Construction consisting of deep ribbed steel Floretyle whose flanges are locked into the prongs of the ribs of Locktyle Lath.

Locktyle Lath is furnished in rolls 100 ft. long x 2 ft. wide, the ribs running in the direction of the 2 ft. width. It consists of ribs $\frac{3}{8}$ in. high spaced 4.8 in. center to center with a diamond mesh between the ribs. At the proper distance from the ends, each rib has a prong punched upward (see illustration). Locktyle Lath is shipped in rolls with the ribs turned inward. After it rolls out on the form, the ribs and prongs are on the upper side for immediate placing of the ribbed Floretyle.

Locktyle Construction is easily and speedily erected. It saves in concrete and plastering cost and insures true and straight concrete joists with positive attachment of the ceiling in reinforced concrete construction. It insures constant width of concrete joists, making unnecessary the use of any spacers, and saves all expensive nailing of the steel Floretyle to the form boards.

As used with Locktyle Lath, all heights of ribbed Floretyle are 20 in. wide at the base, exclusive of the flanges along the bottom edges.



FERROCLAD STRUCTURAL PANELS

STEEL or non-ferrous metal faced one or both sides with insulated, acoustic, fire-resisting or rigid type cores, manufactured in panel sizes up to 4 ft. x 12 ft. and in any thickness from $\frac{1}{8}$ in. upwards. Metal faced and core material cemented together under hydraulic pressure with a non-corrosive, waterproof cement capable of withstanding temperature between minus 110 degrees to 850 degrees, without giving off odors or having any deterioration.

PANEL TYPES

Ferroclad Insulated Structural Panels—Internal conductance .33 B.t.u. per square foot per hour per degree of temperature difference. Can be used between temperatures of 0 and 250 degrees Fahrenheit.

Ferroclad Acousti-Panels—Internal conductance .33 B.t.u. per square foot per hour per degree of temperature difference. Sound absorption co-efficient .30, .47 or .70.

Ferroclad Rigid Structural Panels—Small insulation and acoustic value. Structural value to meet conditions.

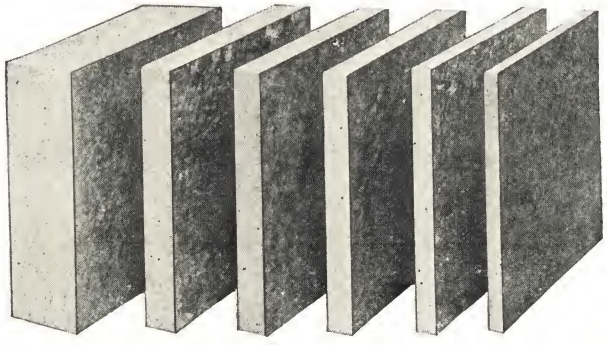
Ferroclad Low Temperature Panels—Internal conductance from .20 to .30 B.t.u. per square foot per hour per degree of temperature difference. Moisture resisting. Light in weight. Structurally very good. Can be used up to 1600 degrees Fahrenheit.

Ferroclad Fireproof Panels—Internal conductance .50 B.t.u. per square foot per hour per degree of temperature difference. Solid structural panel. Moisture proof.

Metal faces can be furnished plain, prepared for lacquers or enamels, or finished with any type of wood veneer.

Edge and joint construction can be fabricated into panels to meet particular conditions.

All panels can be waterproofed without affecting insulation, acoustic and fireproofing qualities.

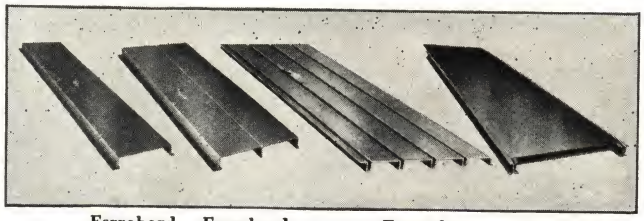


Recommended for:

Dryers and Kilns, Low and High Temperature
Rigid Radiator Enclosures and Conduits
Insulation Backs for Radiators
Insulated Ceilings, Wall or Roof Construction
Air Duct Construction
Refrigerators and Cold Storage Plants
Blower and Fan Panel Construction
Panels for Oven Construction
Panels for Residential Furnace and Boiler Construction
Panels for Air Cleaning, Cooling and Humidifying Equipment

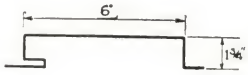
STEELDECK ROOFS

STEELDECK Roofs, insulated to any degree and waterproofed, are of a broad and general usefulness. They are particularly adaptable to theatres, gymnasiums, schools, auditoriums, public halls and industrial buildings requiring large floor areas free from supports and obstructions. Steeldecks are plates of copper-bearing steel of standardized lengths and widths, with ribs formed longitudinally in the plates. The ribs are on the underside of the plates and the top is a smooth level surface to receive insulation and waterproofing. They can be used to advantage on straightway, flat, pitched and curved roofs with a minimum radius of 40 ft.



Ferrobord 6 in. wide | Ferrobord 8 in. wide | Ferroplate | Ferrodeck

FERROBORD



This roofdeck, 6 or 8 in. wide, is so formed that each sheet firmly interlocks with the adjoining sheet to form a continuous deck over the entire roof.

Ferrobord 6 in. wide is used for spans between 6 and 10 ft. Made in 20 and 18 gauge with ribs either 1¼ or 1¾ in. deep depending upon the load.

Any length may be supplied and butt joints may occur between supports by using butt clips.

Ferrobord 8 in. wide is used when spans are between 2 ft. and 5 ft. 6 in. Made in 24 and 22 gauge with ribs 1 in. deep. Standard length 12 ft. Laps must occur over supports.

Welding Ferrobord—This deck is especially adaptable for the arc welding process of erection because the flat, bottom flange of the rib presents an extremely easy and simple welding condition. The operation is done from above, with each weld readily accessible.

FERROBORD SECTIONS FOR DIFFERENT SPANS AND ROOF LOADINGS

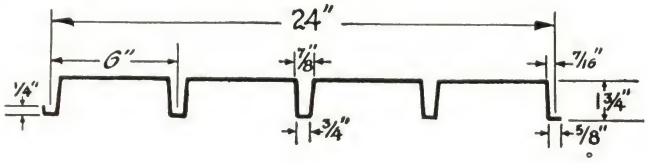
Type of Ferrobord	Span in feet	Total dead load and live load per square foot											
		25 lbs.		30 lbs.		35 lbs.		40 lbs.		45 lbs.		50 lbs.	
		Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth	Gauge	Depth
6" wide	6' 0"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¼"
6" wide	6' 6"	20	1¼"	20	1¼"	20	1¼"	20	1¼"	20	1¾"	20	1¾"
6" wide	7' 0"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"
6" wide	7' 6"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	18	1¾"
6" wide	8' 0"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	20	1¾"	18	1¾"
6" wide	8' 6"	20	1¾"	20	1¾"	20	1¾"	18	1¾"	18	1¾"		
6" wide	9' 0"	20	1¾"	20	1¾"	18	1¾"	18	1¾"				
6" wide	9' 6"	18	1¾"	18	1¾"								
6" wide	10' 0"												

The above table has been computed on the following assumptions:
Maximum unit fiber stress 18,000 pounds per sq. inch.
Maximum allowable deflection is one two-hundred and fiftieth $(\frac{1}{250})$ of the span in inches based on either a uniform or an equal concentrated load.

Dead load of Truscon Ferrocoustic with insulation, built-up roofing and acoustical panels approximately five (5) to nine (9) pounds per sq. foot, according to the type of material used.

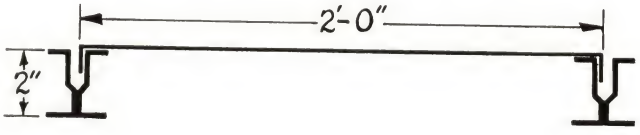
FERROPLATE

18, 20, 22 or 24 gauge copper-bearing sheets or galvanized sheets (before fabrication) 24 in. wide; ribs 1¾ in. deep; maximum length, under 12 ft. Welded to purlins.



FERRODECK

An assembly of sub-purlins and reinforced roof sheets. Sub-purlins, 2 in. deep, 18 gauge. Roof sheets, 2x4 ft., 18 or 20 gauge; substantially reinforced with angles every 16 in. on center.



FERROCOUSTIC

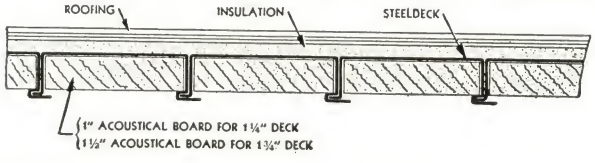
Ferrocoustic Roofdecks provide all the advantages of Steeldeck with the additional feature of acoustical correction for auditoriums, large rooms, gymnasiums and similar places.

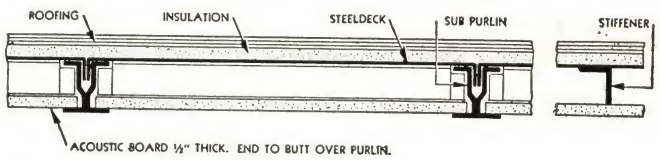
FERROBORD, 6 in. wide, with acoustical treatment, consists of panels of any commercial acoustical board fitted between the ribs of these roofdecks. The flanges of the ribs form a positive mechanical support. These ribs are either 1¼ or 1¾ in. deep, allowing either 1 or 1½ in. of acoustical treatment to be used. Sheets with acoustical board inserted are welded to purlins, eliminating metal clips and adding strength to the construction.

The Ferrobord construction with the Ferrocoustic treatment also makes an excellent, light-weight, quiet floor construction of minimum thickness when surfaced with cement, magnesite, rubber tile, linoleum or other materials, for its structural design enables it to carry unusually heavy loads.

FERRODECK with acoustic board applied makes also an excellent installation. The sub-purlins are secured to the supporting roof framing with clips or by the welding process.

The acoustic board, which is ½ in. thick, is laid on the bottom flanges of the sub-purlins, then the fabricated roof sheets are placed so that the flanged-over edges of adjacent sheets fit side by side into the openings along the tops of the sub-purlins. The acoustical board automatically is held firmly in place by the stiffening angles in the roof sheets.





STANDARDIZED STEEL BUILDINGS AND STRUCTURAL STEEL

THESE buildings involve only the use of Truscon products. Their variety of types and sizes, and the option of steel walls, Ferroclad Walls, or walls in combination with brick, concrete or stucco, allow a wide latitude in the selection of the individual structure.

Structural Steel for Framing—Conforms to accepted practice and is designed to support standard loads.

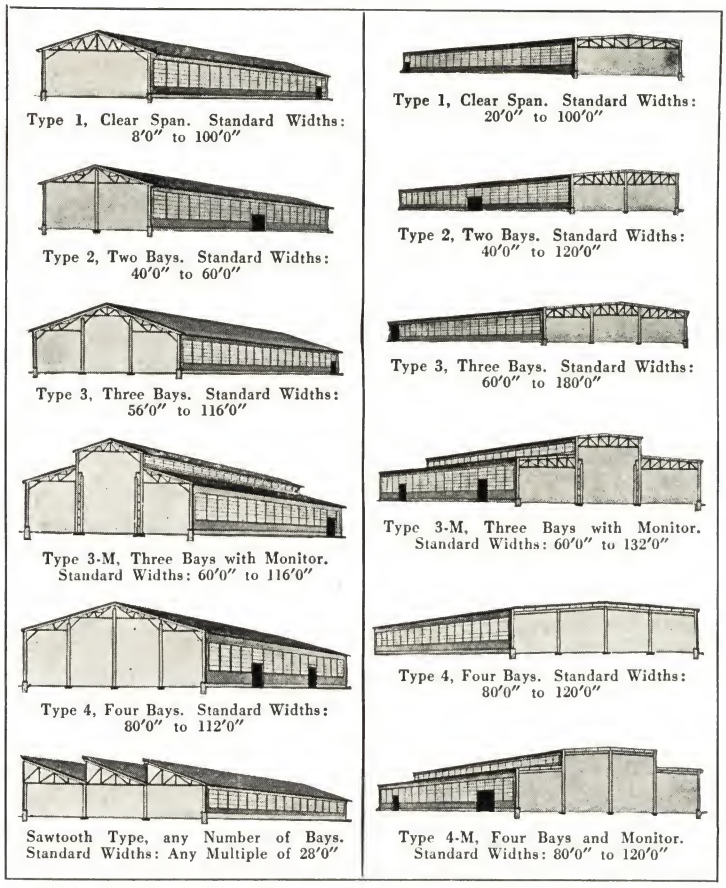
Steel Windows—Standard Steel Windows and Operators for steel windows are used throughout.

Steel Doors—Standard swing or slide types for openings up to approximately 9 ft. square; other Truscon doors for larger openings.

Roofdeck—Truscon Ferrodeck, insulated to any degree and waterproofed with standard roofing.

Series "A" Buildings—*Pitched Roof Types:* Lengths—multiples of 2 ft.; heights—8 ft. 1 in. or greater, varying in multiples of 2 ft. 8 in.; standard curb heights—8 in., 16 in. and 24 in.; standard lantern—12 ft. wide, 6 ft. 10 in. high.

Series "B" Buildings—*Flat Roof Types:* Lengths—multiples of 2 ft.; heights—11 ft. 5 in. to 32 ft. 9 in. or greater, varying in multiples of 2 ft. 8 in.; standard curb heights—8 in., 16 in. and 24 in.; standard lantern—16 ft. wide, 8 ft. high.



Type 1, Clear Span. Standard Widths: 8′0″ to 100′0″

Type 2, Two Bays. Standard Widths: 40′0″ to 60′0″

Type 3, Three Bays. Standard Widths: 56′0″ to 116′0″

Type 3-M, Three Bays with Monitor. Standard Widths: 60′0″ to 116′0″

Type 4, Four Bays. Standard Widths: 80′0″ to 112′0″

Sawtooth Type, any Number of Bays. Standard Widths: Any Multiple of 28′0″

Type 1, Clear Span. Standard Widths: 20′0″ to 100′0″

Type 2, Two Bays. Standard Widths: 40′0″ to 120′0″

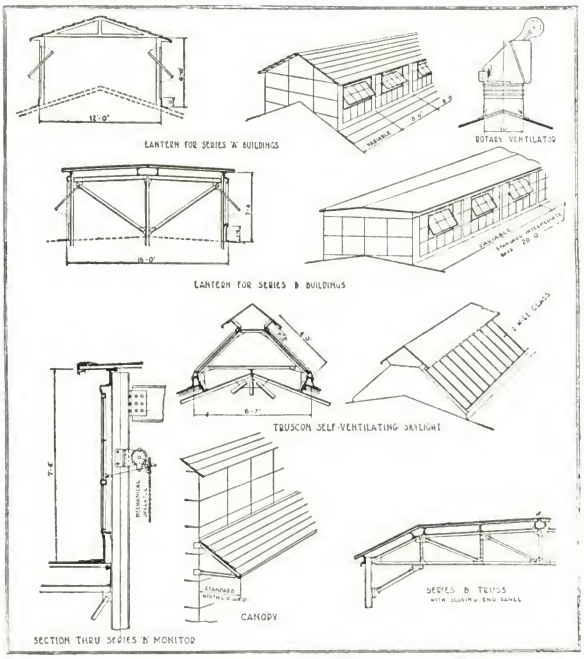
Type 3, Three Bays. Standard Widths: 60′0″ to 180′0″

Type 3-M, Three Bays with Monitor. Standard Widths: 60′0″ to 132′0″

Type 4, Four Bays. Standard Widths: 80′0″ to 120′0″

Type 4-M, Four Bays and Monitor. Standard Widths: 80′0″ to 120′0″

Series "A"—Pitched Roofs **Series "B"—Flat Roofs**



Details of Standardized Accessories

[Truscon Engineers welcome the opportunity to collaborate with architects and engineers in developing the most efficient use of structural steel and complete steel buildings]

BUILDINGS WITH FERROCLAD WALL PANELS

FERROCLAD Wall Panels are made of a fibrous insulated board, 1 in. thick, the outer face being covered with a 20 ga. sheet of copper-bearing steel, the inner face with a 24 ga. sheet of copper-bearing steel. Each sheet is securely bonded to the insulating board. Ferroclad Walls have great structural strength and offer a resistance to temperature change equal to that of a 12-in. masonry wall.

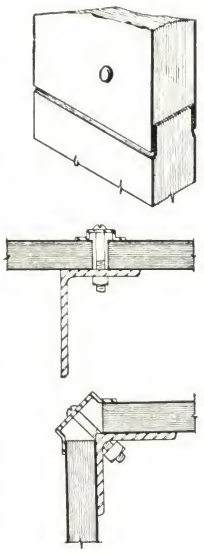
The nominal size of the standard wall panel is 4-ft. wide and 2-ft. 8-in. high. When necessary to obtain variation in the length of the building or location of doors, panels 2-ft. wide may be used.

Edges of panels are sealed to protect the insulation from moisture. Steel sheets are galvanized or shop painted with standard gray Bar-Ox paint.

Horizontal Joint—A system of positive weathering and alignment has been developed to take care of the joint as one panel is placed above another. Galvanized rivets are used to prevent accidental spreading of insulation. Rivets are kept back far enough from the vertical edges of the panels to clear studs and cover plates.

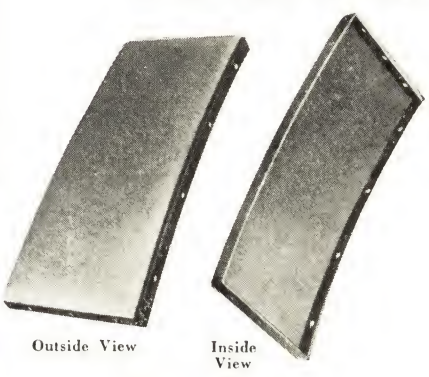
Vertical Joint—The vertical joint is made by clamping the edges of adjoining panels between the structural steel stud and a cover plate. Note that the cover plate bears on the panels with a flat surface for weathering.

Building Corner—A special corner cover plate is used to clamp the panels to the corner stud. Note that the building dimensions in multiples of 2-ft. are taken at the outside line of the studs.

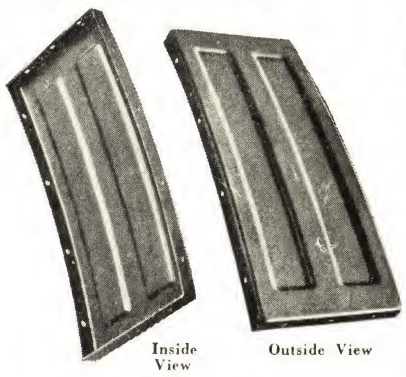


STEEL LINER PLATES

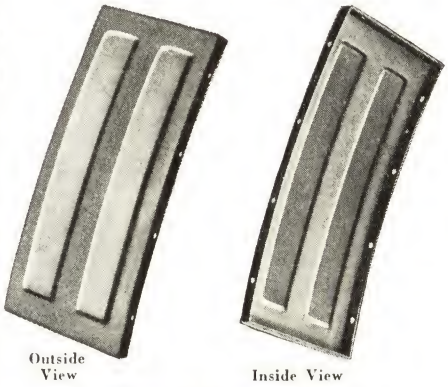
(Licensed under U. S. Patents: No. 1778606 and No. 1757813)



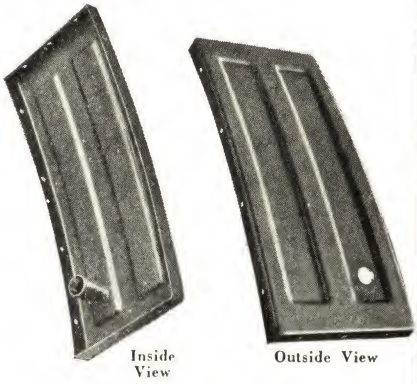
Smooth Plates



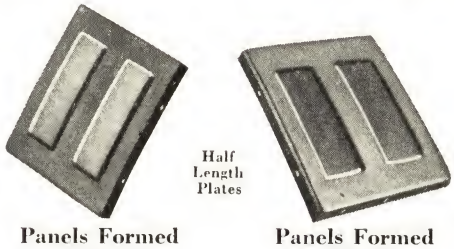
Panels Formed "In"



Panels Formed "Out"



With Grout Holes



Panels Formed "Out" **Panels Formed "In"**

THREE GENERAL TYPES

(1) Smooth Plates without stiffening panels for caissons, assembled and sunk from ground level, requiring a minimum of skin friction.

(2) Plates strengthened by embossed *stiffening panels formed "In,"* for tunnels and shafts permitting maximum economy in lining materials.

(3) Plates strengthened by embossed *stiffening panels formed "Out,"* for various uses where maximum strength and rigidity are essential.

DIMENSIONS

One standard width: 16-in.

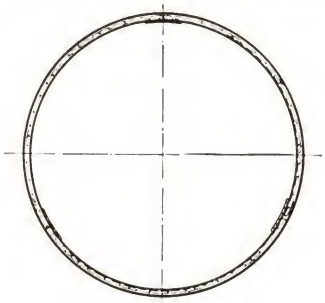
Two standard lengths: $37\frac{11}{16}$-in. and 36-in.

The $37\frac{11}{16}$-in. size is used where the diameter is in whole feet, one plate being required for each foot of diameter. Half Plates permit diameters in multiples of 6 in. The 36-in. size is used for certain other odd diameters. Half Plates are also available.

Grout holes, tapped for 1½-in. pipe, provided where required.

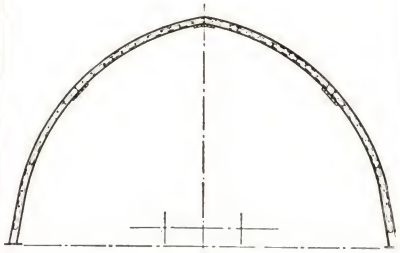
TRUSCON STEEL COMPANY - Cleveland, Ohio
PRESSED STEEL DIVISION

Typical Standard Contours of Large Tunnels Using Ribbed Construction Between Courses of Plates

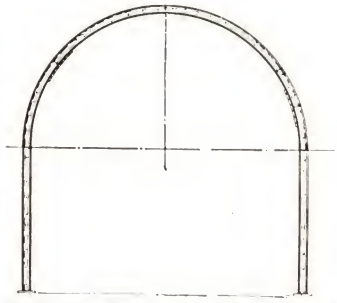


Circular

Semicircular

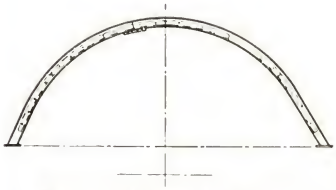


Bee Hive



Arch Roof with Straight Sides

Arc



Arch with Straight Sides

TRUSCON

EXECUTIVE OFFICES AND MAIN PLANT

YOUNGSTOWN, OHIO

FACTORIES: CLEVELAND, CANTON, DETROIT, LOS ANGELES, WALKERVILLE, JAPAN, BUENOS AIRES
THE TRUSCON LABORATORIES, DETROIT
PRESSED STEEL DIVISION, 6100 TRUSCON AVENUE, CLEVELAND
BERGER BUILDING DIVISION, CANTON, OHIO
FOREIGN TRADE DEPARTMENT, 155 E. 44TH STREET, NEW YORK

TRUSCON ENGINEERING AND SALES OFFICES

ALBANY, N. Y., 75 STATE STREET
ALTOONA, PA., 3509 FT. ROBERDEAU STREET
ATLANTA, GA., 610 RHODES-HAVERTY BUILDING
BALTIMORE, MD., 330 W. 24TH STREET
BIRMINGHAM, ALA., 1105 MARTIN BUILDING
BOSTON, MASS., 38 CHAUNCY STREET
BUFFALO, N. Y., 402 SIDWAY BUILDING
CHARLESTON, W. VA., 1564 DIXIE STREET
CHATTANOOGA, TENN., 1222 JAMES BUILDING
CHICAGO, ILL., 201 NO. WELLS STREET
CINCINNATI, OHIO, 1026 DIXIE TERMINAL BLDG.
CLEVELAND, OHIO, 1304 BUILDERS' EXCHANGE BLDG.
COLUMBUS, OHIO, 1000 ATLAS BUILDING
DALLAS, TEXAS, 414 CONSTRUCTION BUILDING
DAYTON, OHIO, 925 MEREDITH STREET
DENVER, COLORADO, 2046 SO. LOGAN STREET
DES MOINES, IOWA, HUBBELL BUILDING
DETROIT, MICHIGAN, 615 WAYNE STREET
FORT WAYNE, IND., 426 CAL-WAYNE BUILDING
GREENSBORO, N. C., 200 WAVERLY WAY
HARRISBURG, PA., 600 NO. SECOND STREET
HOUSTON, TEXAS, 731 A. M. & M. BUILDING
INDIANAPOLIS, IND., 812 UNION TITLE BUILDING
JACKSONVLLE, FLA., 3RD AND CLARK STREETS
KANSAS CITY, MO., 101 W. 11TH STREET
LITTLE ROCK, ARK., 1020 E. 13TH STREET
LOS ANGELES, CALIF., 5480 E. SLAUSON AVENUE
MEMPHIS, TENN., 263 WALNUT STREET
MILWAUKEE, WIS., 1200 STRAUS BUILDING
MINNEAPOLIS, MINN., 354 BAKER BUILDING
NEWARK, N. J., 605 BROAD STREET
NEW HAVEN, CONN., 42 CHURCH STREET
NEW ORLEANS, LA., 1042 CANAL BANK BUILDING
NEW YORK, N. Y., 155 E. 44TH STREET
NORFOLK, VA., 22ND AND MANTEO STREETS
OKLAHOMA CITY, OKLA., 716 W. GRAND AVENUE
OMAHA, NEB., 5606 JONES STREET
PHILADELPHIA, PA., 906 ARCHITECTS BUILDING
PHOENIX, ARIZ., 222 LUHRS BUILDING
PITTSBURGH, PA., 523 GRANT BUILDING
PORTLAND, OREGON, 2139 NO. KERBY AVENUE
RICHMOND, VA., 932 CENTRAL NATIONAL BANK BUILDING
ROSWELL, N. M., COUNTY ENGINEER'S OFFICE
ST. LOUIS, MO., 1005 ST. LOUIS MART BUILDING
SALT LAKE CITY, UTAH, 1526 SO. WEST TEMPLE STREET
SAN ANTONIO, TEXAS, 902 TRAVIS BUILDING
SAN FRANCISCO, CALIF., 74 NEW MONTGOMERY STREET
SCRANTON, PA., 1717 MULBERRY STREET
SEATTLE, WASH., 217 LLOYD BUILDING
SYRACUSE, N. Y., 540 GURNEY BUILDING
TAMPA, FLA., MORGAN AND BELL STREETS
TOLEDO, OHIO, 312 RICHARDSON BUILDING
WASHINGTON, D. C., 938 INVESTMENT BUILDING

TRUSCON WAREHOUSES

BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEXAS
DETROIT, MICH.
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LONG ISLAND CITY, N. Y.
LOS ANGELES, CALIF.
MILWAUKEE, WIS.
NEWARK, N. J.
NEW YORK, N. Y.
NORFOLK, VA.
PHILADELPHIA, PA.
PORTLAND, OREGON
SAN FRANCISCO, CALIF.
ST. LOUIS, MO.
ST. PAUL, MINN.